





Protocols and Definitions Device-associated Module

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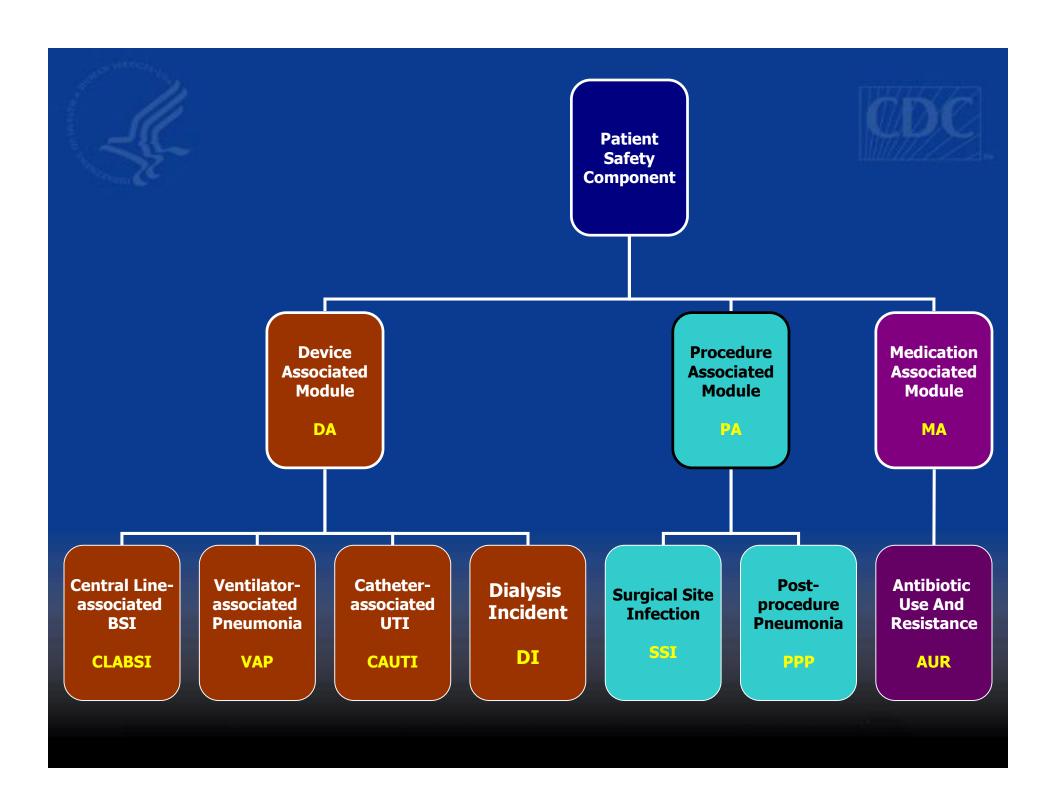
Target Audience

- This training session is designed for those who will collect and analyze Central Line-associated bloodstream infections and their associated denominators in the Patient Safety Component of NHSN. This may include:
 - NHSN Facility Administrator
 - Patient Safety Primary Contact
 - Infection Control Professional (ICP)
 - Epidemiologist
 - Microbiologist
 - Data entry staff



- Outline the structure, methodology and purpose of the Device-associated Module of NHSN
- Describe the protocols and definitions used in the CLABSI, VAP and CAUTI options within the Device-associated Module

http://www.cdc.gov/ncidod/dhqp/nhsn_members.html



Surveillance for DA HAI

- Active (vs. passive)
 - Trained ICPs look for and identify infections
 - Accumulate information from multiple data sources
- Patient-based (vs. laboratory-based)
 - Not based solely on laboratory data
 - Identification of risk factors, patient care procedures
- Prospective (vs. retrospective)
 - Monitor patients during their hospitalization when possible







Department of Health and Human Services Centers for Disease Control and Prevention

NHSN - National Healthcare Safety Network

NHSN Home



Reporting Plan

■ Add

■ Find

Patient

Event

Procedure

Summary Data

Analysis

Survey

Users

Facility

Group

Log Out

Logged into DHOP MEMORIAL HOSPITAL (ID 10018) as MVA. Facility DHQP MEMORIAL HOSPITAL (ID 10018) is following PS component.

View Monthly Reporting Plan

Mandatory fields marked with *

Facility ID*: DHQP MEMORIAL HOSPITAL (10018)

Month*: October

Year*: 2006

Device-Associated Module

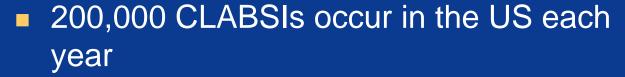
Locations	CLA BSI DI	VAP	CAUTI
NICU - LEVEL 3 NICU	Х	х	
BMT - BONE MARROW TRANSPLANT	Х	X	X
SICU - SURGICAL ICU	X	х	X

Device-Associated Module

Central Line-Associated Bloodstream Infections

CLABSI





- Hospital stay, cost and risk of mortality are all increased
- Prevention through proper insertion and management of the central line
 - CDC Guideline for the Prevention of Intravascular Catheter-Related Infections



https://www.cdc.gov/ncidod/dhqp/gl_intravascular.html

NHSN Location types (settings) where CLABSI events can be monitored

- 1. Intensive care units (ICU)
- 2. Specialty care areas (SCA)
 - a) Hematology/Oncology unit
 - b) Bone Marrow/Stem Cell transplant unit
 - c) Solid organ transplant unit
 - d) Acute inpatient dialysis unit
 - e) Long term acute care
- 3. Neonatal Intensive Care Units (NICU)
- 4. Any other patient care location (e.g., surgical ward, etc.)

CLABSI

- Central Line-Associated Bloodstream Infection (CLABSI) is a primary bloodstream infection (BSI) in a patient that had a central line within the 48-hour period before the development of the BSI
- If the BSI develops in a patient within 48 hours of discharge from a location, indicate the discharging location on the infection report

Central Line

An intravascular catheter that terminates at or close to the heart or in one of the great vessels which is used for infusion, withdrawal of blood, or hemodynamic monitoring.

The following are considered great vessels for the purpose of reporting central line infections and counting central line days

•Brachiocophalic voins

mie days

- Aorta
- Pulmonary artery
- Superior vena cava
- •Inferior vena cava

Brachiocephalic veins

- Internal jugular veins
- Subclavian veins
- External iliac veins
- Common femoral veins

- An introducer is considered an intravascular catheter
- In neonates, the umbilical artery is considered a great vessel
- Neither the location of the insertion site nor the type of device may be used to determine if a line qualifies as a central line
- Pacemaker wires and other non-lumened devices inserted into central blood vessels or the heart are <u>not</u> considered central lines, because fluids are not infused, pushed, nor withdrawn through such devices.

Types of Central Lines

- Temporary A central line that is nontunneled
- Permanent Includes
 - Tunneled catheters, including certain dialysis catheters
 - Implanted catheters (including ports)



- Introduction of a solution through a blood vessel via a catheter lumen
 - Continuous infusions such as nutritional fluids or medications, or
 - May include intermittent infusions such as flushes or IV antimicrobial administration, or blood, in the case of transfusion or hemodialysis

Collecting CLABSI Data

- Specific types of BSI
 - LCBI can be used for all age groups
 - CSEP is only used for
 - neonates (≤30 days) and for
 - infants (≤ 12 months)

Laboratory Confirmed BSI (LCBI) Any patient

Criterion 1

Patient has a recognized pathogen cultured from one or more blood cultures

<u>and</u>

organism cultured from blood is <u>not</u> related to an infection at another site.

Laboratory Confirmed BSI (LCBI)* Any Patient

Criterion 2

Patient has at least <u>one</u> of the following signs or symptoms: fever (>38°C), chills, or hypotension

and

signs and symptoms and positive laboratory results are <u>not</u> related to an infection at another site

and

at least one of the following:

- common skin contaminant (e.g., diphtheroids, *Bacillus* sp., *Propionibacterium* sp., coagulase-negative staphylococci, or micrococci) is cultured from two or more blood cultures drawn on separate occasions
- common skin contaminant) is cultured from at least one blood culture from a patient with an intravascular line, and the physician institutes appropriate antimicrobial therapy

Laboratory Confirmed BSI (LCBI) Neonates / Infants

Criterion 3

Patient < 1 year of age has at least one of the following signs or symptoms: fever (>38°C, rectal), hypothermia (<37°C, rectal), apnea, or bradycardia and

signs and symptoms and positive laboratory results are <u>not</u> related to an infection at another site

and

at least one of the following:

- common skin contaminant (e.g., diphtheroids, *Bacillus* sp., *Propionibacterium* sp., coagulase-negative staphylococci, or micrococci) is cultured from <u>two</u> or more blood cultures drawn on separate occasions
- common skin contaminant is cultured from at least one blood culture from a patient with an intravascular line, and physician institutes appropriate antimicrobial therapy

Clinical Sepsis (CSEP) Neonates / Infants

- Alternate criteria for BSI in neonates and infants in nurseries
 - Well Baby Nursery (Level I)
 - Level II Nursery
 - Level II/III Nursery
 - Level III Nursery
- Not used for adults or children
 - LCBI only choice

Clinical Sepsis (CSEP) Neonates/Infants

Patient < 1 year of age has at least one of the following clinical signs or symptoms with no other recognized cause: fever (>38°C, rectal), hypothermia (<37°C), rectal), apnea, or bradycardia and

blood culture <u>not</u> done or <u>no</u> organisms detected in blood <u>and</u>

no apparent infection at another site and

physician institutes treatment for sepsis.

Example of a Completed BSI Form



Primary Bloodstream Infection (BSI) Form

Page 1 of 2

*required for saving **required for completion *Facility ID#: 10000	*Event #: 121
*Patient ID#: 10245	Social Security #:
Secondary ID#:	
Patient Name, Last: Smith	First: Jane Middle:
*Gender: (F) M	*Date of Birth: 06/14/1951
*Event Type: BSI	*Date of Event: 01/19/2006
*Post-procedure BSI: (Yes) No	Date of Procedure: 01/14/2006
NHSN Procedure Code: HPRO	ICD-9-CM Code:
*Location: MSICU	*Date Admitted to Facility: 01/13/2006
Risk Factors	
*If ICU/Other locations, Central *If Specialty Care Area,	line: Yes No
Permanent central line:	Yes No
Temporary central line:	Yes No
*If NICU,	
Central line:	Yes No
Umbilical catheter: Birth weight (grams):	Yes No

Example BSI Form (bottom section)

*Specific Event: (check Laboratory-confirmed or Clinical sepsis) Laboratory-confirmed: No infection at another site + (check one pathway below) Recognized pathogens: ≥ 1 blood culture positive Other organisms: ≥ 2 blood cultures from separate sites positive w/same organism + clinical sx Other organisms: ≥ 1 blood culture positive in pt with IV + clinical sx + antimicrobial therapy Clinical sepsis:≥ 1 clinical symptom + blood culture not done or negative + no infection at another site + antimicrobial therapy **Died: Yes No BSI Contributed to Death: Yes No Discharge Date: 01/23/2006 *Pathogens Identified: Yes No *If Yes, specify on page 2 The pathogens of the pa							
Laboratory-confirmed: No infection at another site + (check one pathway below) Recognized pathogens: ≥ 1 blood culture positive Other organisms: ≥ 2 blood cultures from separate sites positive w/same organism + clinical sx Other organisms: ≥ 1 blood culture positive in pt with IV + clinical sx + antimicrobial therapy Clinical sepsis: ≥ 1 clinical symptom + blood culture not done or negative + no infection at another site + antimicrobial therapy **Died: Yes No BSI Contributed to Death: Yes No Discharge Date: 01/23/2006 *Pathogens Identified: Yes No *If Yes, specify on page 2	Event Details						
**Died: Yes No Discharge Date: 01/23/2006 *Pathogens Identified: Yes No *If Yes, specify on page 2 Custom Fields	*Specific Event: (check Laboratory-confirm	No infection at another site + (check one pathway below) ens: ≥ 1 blood culture positive ≥ 2 blood cultures from separate sites positive w/same organism + clinical sx 1 blood culture positive in pt with IV + clinical sx + antimicrobial therapy I symptom + blood culture not done or negative + no infection at another site					
Discharge Date: 01/23/2006 *Pathogens Identified: Yes No *If Yes, specify on page 2 Custom Fields							
*If Yes, specify on page 2 Custom Fields		BSI Contributed to Death: Yes No					
*If Yes, specify on page 2 Custom Fields	Discharge Date: 01/23/2006	*Pathogens Identified: (Yes) No					
		*If Yes, specify on page 2					
Label	Custom Fields						
Comments		Label /					

Pathogen Data

- List up to 3 pathogens for each CLABSI identified (in rank order of importance)
- For each pathogen, complete information about antimicrobial susceptibilities
- Only certain bug/drug combinations are required but up to 20 drugs can be listed with susceptibilities

Example of BSI Form - Pathogen Info



Primary Bloodstream Infection (BSI) Form

OMB No. 0920-0666 Exp. Date: 02-29-2008

-									
Pathogen #	G ram-positive	Organis	sms						
2	Coagulase-negative staphylococci	VANC S RN							
4- 772 - 12772012	Enterococcus faecalis	AMP SIRN	DAPTO SIRN		R. T.	AN C IRN			
1	Enterococcus faecium	AMP S RN	DAPTO § IR N			UIDAL I RN	VANC SIRN		
1 -2	- cap, rococodo	IND DAP			LNZ OX SIRN SI		DAL RIF		
Pathogen #	G ram-negative	Organi	sms						
	Acinetobacter spp. (specify)	AMK AI SIRNS	MPSUL CEF IRN SI	EP CEFTA RN SIRN		IMI L SIRNS		MERO SIRN	PIPTAZ SIRN
S SS-2-1500	Escherichia coli		C EFEP CEF SIRN SII			CIPRO SIRN		LEVO SIRN	MERO SIRN
	Enterobacter spp. (specify)		CEFEP CEF SIRN SI			CIPRO SIRN		LEVO SIRN	MERO SIRN
	Klebsiella oxytoca		CEFEP CEF			CIPRO SIRN		LEVO SIRN	MERO SIRN

CLABSI Denominator Data for ICU/Other Locations

- Use Denominators for ICU/Other Locations form
- At the same time each day, count
 - # patients (i.e., patient days)
 - # patients with one or more central lines (i.e., central line-days)
- Enter the totals within 30 days of the end of the month

Example of Completed Denominators for ICU

N-SN National Healthcare Safety Network

Denominators for Intensive Care Unit (ICU)/
Other locations (not NICU or SCA)

* required for saving

OMB No. 0920-0666

Exp. Date: 02-29-2008

*Facility I	D# 10000 *Mo	onth: Feb *Year	*Location Code	MSICU)
Date	*Number of patients	**Number of patients with 1 or more central lines	**Number of patients with a urinary catheter	**Number of patients on a ventilator
1	6	6		
2	8	6		
3	6	4		
4	7	7		i)
5	6	6		0
6	8	6	0	0
7				
8	5	8		7
9				
10		Y .		
11	11	11		
31	11	11		
*Totals	151	138		
	Patient-days	Central-line days	Urinary catheter-days	Ventilator-days

CLABSI Denominator Data for Specialty Care Areas (SCA)

- Use Denominators for Specialty Care Areas (SCA) form
- At the same time each day, count
 - # patients (i.e., patient days)
 - # patients with one or more central lines (i.e., central line-days) separated into
 - Temporary central lines and
 - Permanent central lines*
- Enter the totals within 30 days of the end of the month
 - * If a patient has both a temporary and a permanent line, count as a patient with <u>only</u> a temporary line

Example of Completed Denominators for SCA Form



Denominators for Specialty Care Area (SCA)

OMB No. 0920-0666 Exp. Date: 02-29-2008

* required for saving

*Facility II	D# : 10000	*Month: Jan	*Year: 20	006 *Location Code: LT	TAC
Date	*Number of patients	with 1 centra	of patients or more al lines count as Temporary)	**Number of patients with a urinary catheter	**Number of patients on a ventilator
		Temporary	Permanent		
1		30.27			
2	4	1	3		
3	6	4	1		
4	7	1	4		
5	4	2	0		
6	4	4	4		9
7	6	4	2		(6)
26	8	& *S		8	
27		10			
28	,				
29		,			
30					
31					
*Totals	141	84	14		

CLABSI Denominator Data for NICU

- Use Denominators for NICU form
- At the same time each day, count for each birthweight category:
 - # patients (i.e., patient days)
 - # patients with one or more central lines (i.e., central line-days) separated into central lines and umbilical catheters*
- Enter the totals within 30 days of the end of the month

*If an infant has both an umbilical catheter and a central line, count as an umbilical catheter day.



- ≤ 750 grams
- 751-1000 grams
- 1001-1500 grams
- 1501-2500 grams
- >2500 grams

Example of Completed Denominators for NICU Form



Denominators for Neonatal Intensive Care Unit (NICU)

OMB No. 0920-0666 Exp. Date: 02-29-2008

* required for saving

*Facility	/ ID# :	10000	*Month:	Jan	*Year:	2006 *Location Code: NICUW
				Birth \	Weight Cate	egories

Date	e <u><</u> 750 gm		7	51-10	000 g	m	10	01-1	500	gm	15	01-2	500	gm		>250	00 gn	n	
	*Pts	**U/0	**CL*	*VNT *Pts	**U/C	**CL	**VNT	*Pts	**U/C	**CL	**VNT	*Pts	**U/C	**CL	**VNT	*Pts	**U/C	**CL	**VN
1	4	4	0	4	0	4		4	4	4		4	1	2		6	1	4	
2	6	2	3	6	0	6		6	6	6		4	1	2		6	1	4	
3	7	6	0	7	1	4		7	7	7		1	1	0		4	0	4	
4	4	4	0	4	0	4		4	1	2		4	1	2		4	0	4	
5	4	2	1	4	4	4		4	4	4		4	4	4		5	1	4	
6	6	3	3	5	3	1		1	1	0		6	1	4		4	0	4	
7	5	2	3	3	0	3		1	1	0		5	5	0		4	0	4	
8	4	0	4	0	0	0		1	1	0		5	5	0		4	0	4	
27		3		0	3 1					S						(5)——):			
28				50	00 V											3			
29					Sc. 2					,			: :		i i	3.			
30				65	55 3							-			É	65 - 3			
31				92	ya s								· .		is .	90.			
*Total	116	62	44	100	44	31		88	63	16		101	68	24		116	7	100	

Pts=number of infants U/C=number of infants with umbilical catheter CL=number of infants with 1 or more central lines
VNT=number of infants on a ventilator *If infant has both a U/C and CL, count as U/C infant only for the day

^{**} Conditionally required according to the events indicated in Plan.

Analysis: CLABSI Rate

- Stratify by:
 - Type of ICU/Other Location
 - SCA
 - Temporary central line
 - Permanent central line
 - NICU
 - Birthweight category
 - Catheter type (umbilical or central)

Analysis: Device Utilization (DU) Ratio

DU ratio measures the proportion of patientdays in which central lines were used

Example of CLABSI Analysis

National Healthcare Safety Network
Rate Table for Central Line-Associated BSI Data for ICU-Other

As of: August 15, 2006 at 10:56 AM

Date Range: CLAB_RATESICU summary 10, 2006Q1 to 2006Q1

Org ID=10000

	HSN
NHSN L	.ine
CLA Central CLA CLAB Incidence Incidence CL [DU
BSI Line BSI Pooled Density Density Patient Util Po	oled Proportion Proportion
Location Count Days Rate Mean p-value Percentile Days Ratio M	lean p-value Percentile
3 MS 5 1,057 4.7 3.2 0.2439 78 1,819 0.58 0 0	0.50 0.0000 79

Pooled Means and Percentiles of the Distribution of Central Line-associated Bloodstream Infection (BSI) Rates, By Type of ICU, NNIS ICU Component, 1/02-6/04

Central line-asso	ciated BS	SI rate**		Percentile						
	No. of	Central Line	- Pooled	10%	25%	50%	75%	90%		
Type of ICU	Units	Days	Mean			(median)				
Coronary	60	116,546	3.5	1.0	1.5	3.2	7.0	9.0		
Cardiothoracic	48	182,407	2.7	0.0	0.9	1.8	2.7	4.9		
Medical	94	312,478	5.0	0 <mark>.</mark> 5	2.4	3.9	6.4	8.8		
Medical-Surgical										
Major teaching	100	430,979	4.0	1.7	2.6	3.4	5.1	7.6		
All others	109	486,115	3.2	0.8	1.6	3.1	4.3	6.1		
Neurosurgical	30	56,645	4.6	0.0	0.9	3.1	5.8	10.6		
Pediatric	54	161,314	6.6	0 <mark>.</mark> 9	3.0	5.2	8.1	11.2		
Surgical	99	358,578	4.6	<mark>9</mark> .0	2.0	3.4	5.9	8.7		
Trauma	22	70,372	7.4	1.9	3.3	5.2	8.2	11.9		

Number of central line-associated BSI X 1000

NMS Report 2004; AJIC 32:470-85.





Questions about CLABSI?

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